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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,137	02/27/2004	Yutaka Kai	826.1928	4648

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EXAMINER	
LE, THI Q	

ART UNIT	PAPER NUMBER
2613	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/787,137	KAI ET AL.	
	Examiner	Art Unit	
	Thi Q. Le	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *6,9-14,19-25 and 27-31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 26* is/are rejected.

7)☒ Claim(s) *7-8, 15-18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2004* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :2/27/07, 6/3/2004, 7/19/06, 12/7/06.

DETAILED ACTION

This Action is in response to Applicant's restriction election filed on 03/06/2007. **Claims 1, 7-8, 15-18 and 26** were elected.

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

Information Disclosure Statement

2. The information disclosure statement (IDS) filed on 2/27/2007, 6/3/2004, 7/19/2006, 12/7/2006 were considered by the examiner.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "**Optical Add/Drop multiplexer using tunable filter and method for feedback controlling the tunable filter**".

Claim Objections

4. **Claims 5, 7** are objected to because of the following informalities:

Claim 7 is dependent upon claim 1, and claims a first optical strength detecting unit and a third optical strength detecting unit. It appears to be illogical for an "optical transmission

device" to includes a "first" and "third", wherein a "second" is missing in the claim. Claim 5 refers to a second optical strength detecting unit; thus it would be more logical for claim 7 to depends upon claim 5, because includes a "first", "second" and "third" optical strength detecting unit.

- On **lines 2** of **claim 5**, insert --:-- after "comprising";

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. **Claims 1-3** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watterson et al. (US PGPub 2004/0091002)** in view of **Korn et al. (US Patent # 6,407,376)**.

Consider **claim 1**, Watterson disclose, an optical transmission device, comprising: an optical tunable filter (read as, Tunable Fabry-Perot filter 105; figure 3, paragraph 0024-0025) which transmits and extracts signal light with a specific wavelength and whose wavelength transmission characteristic varies depending on a control signal (read as, Controller 115 controls the filter 105 for exacting a desired wavelength; figure 3, paragraphs 0035); a light transmission filter (read as, wavelength reference device, which includes etalon filters 130/160 and dielectric filter 155; figures 3 and 4, paragraphs 0028-0029) to which signal light extracted by the optical tunable filter is inputted and which has a wavelength transmission characteristic curve that has its peak in a wavelength located between a first continuous set band and a second continuous set band longer in wavelength than the first set band, and that linearly drops from the peak toward a shorter wavelength side than the first set band and also toward a longer wavelength side than the second set band (shown on figure 5a-b, it can be seen that dielectric filter 155 provides a wavelength transmission characteristic curve 158; which has it's peak situated at 170A. Wavelengths to the left of the peak are considered to be a first set band; where as, wavelengths to the right of the peak are considered as a second set band. Further, it can been seen that from the peak of curve 158 looking toward the left, the curve 158 is linearly decreasing; while looking

from peak to curve 158 toward the right, the curve 158 is also linearly decreasing; figures 5a-b, paragraphs 0029-0030); and a control signal generating unit generating a control signal needed to enable the optical tunable filter to extract the signal light with a desired wavelength, based on the light transmitted through the light transmission filter (read as, controller 115 reads outputs from detectors 145/175 and adjust the tunable filter 105 for filtering at a desired wavelength; figures 3,4 paragraph 0035). Although Watterson discloses an input signal to the tunable filter 105 is a "broad band" light; Watterson fails to disclose the tunable filter is extracting a light signal with a desired wavelength from signal light multiplexed by a wavelength-division multiplexing (WDM) method.

In related art, Korn disclose an optical channel monitoring system with self-calibration. Wherein, the tunable filter is extracting a light signal with a desired wavelength from signal light multiplexed by a wavelength-division multiplexing (WDM) method (figure 1 shows that an input optical signal to the tunable filter 150 is a WDM signal, as seen from plot 10; figure 1, column 3 lines 35-40).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to incorporate the teachings of Korn with Watterson. Because the advantage of using WDM system is that the transmission capacity of a single fiber is increased. Thus allowing more data to be transfer.

Consider **claim 2**, and **as applied to claim 1 above**, Watterson as modified by Korn further disclose, wherein the first set band is a wavelength band between 1,525 nm and 1,565 nm; the second set band is a wavelength band between 1,570 nm and 1,610 nm (Korn disclosed from figure 1, that an input optical signal into tunable filter 150 includes C Band (1530-1565)

and L Band wavelengths (1570-1605); and the peak of the wavelength transmission characteristic curve exists between 1,565 nm and 1,570 nm (Watterson disclose a filter with transmission characteristic curve with a peak situated between two set bands; figure 1, column 3 lines 35-40. Thus, it would've obvious that the filter of Watterson is capable of filtering optical signal, wherein the peaks a wavelength transmission curve is situated between the C Band and L Band; figure 5a-b; paragraphs 0029-0030).

Consider **claim 3**, and **as applied to claim 1 above**, Watterson as modified by Korn further disclose, wherein said light transmission filter further has a wavelength transmission characteristic of blocking signals out of a wavelength band in which the multiplexed signal light is inputted to said optical tunable filter (Watterson teaches, a series connected Etalon filter 160 and dielectric filter 155 provides a method for block wavelength that is out of range; i.e. any wavelengths that do not match the transmission profile of both filters will not be pass; paragraph 0030).

Consider **claim 26**, Watterson disclose, a control method of an optical tunable filter, comprising: detecting light transmitted through a light transmission filter to which signal light (read as, detectors 145 and 175 for detecting signals filtered by etalon filters 130/160 and dielectric filter 155; figure 4, paragraphs 0028-0029), extracted by the optical tunable filter which transmits and extracts signal light with a specific wavelength and whose wavelength transmission characteristic curve varies depending on a control signal (read as, tunable Fabry-Perot filter 105, receives an input broadband light and filters the light; wherein, the wavelength transmission characteristic of tunable filter 105 is controlled by controller 115; figure 3, paragraphs, 0024-0025, 0035), is inputted and which has a wavelength transmission

characteristic curve that has its peak in a wavelength located between a first continuous set band and a second continuous set band longer in wavelength than the first set band and that linearly drops from the peak toward a shorter wavelength side than the first set band and also toward a longer wavelength side than the second set band (shown on figure 5a-b, it can be seen that dielectric filter 155 provides a wavelength transmission characteristic curve 158; which has it's peak situated at 170A. Wavelengths to the left of the peak are considered to be a first set band; where as, wavelengths to the right of the peak are considered as a second set band. Further, it can been seen that from the peak of curve 158 looking toward the left, the curve 158 is linearly decreasing; while looking from peak to curve 158 toward the right, the curve 158 is also linearly decreasing; figures 5a-b, paragraphs 0029-0030); and generating the control signal needed to enable the optical tunable filter to extract signal light with a predetermined wavelength, based on the detected result (read as, controller 115 reads outputs from detectors 145/175 and adjust the tunable filter 105 for filtering at a desired wavelength; figures 3,4 paragraph 0035). Although Watterson discloses an input signal to the tunable filter 105 is a "broad band" light; Watterson fails to disclose the tunable filter is extracting a light signal with a desired wavelength from signal light multiplexed by a wavelength-division multiplexing (WDM) method.

In related art, Korn disclose an optical channel monitoring system with self-calibration. Wherein, the tunable filter is extracting a light signal with a desired wavelength from signal light multiplexed by a wavelength-division multiplexing (WDM) method (figure 1 shows that an input optical signal to the tunable filter 150 is a WDM signal, as seen from plot 10; figure 1, column 3 lines 35-40).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to incorporate the teachings of Korn with Watterson. Because the advantage of using WDM system is that the transmission capacity of a single fiber is increased. Thus allowing more data to be transfer.

9. **Claims 4-5** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watterson et al. (US PGPub 2004/0091002)** in view of **Korn et al. (US Patent # 6,407,376)** and further in view of **Iida et al. (US Patent # 6,597,480)**.

Consider **claim 3**, and **as applied to claim 1 above**, Watterson as modified by Korn further disclose, a first optical strength detecting unit detecting the optical strength of light transmitted through said light transmission filter (Watterson disclosed, a detector 145 for detecting signal from Etalon filter 130; figure 4, paragraph 0028). Watterson as modified by Korn fail to disclose, a storage unit storing information indicating the wavelength transmission characteristic of said light transmission filter, wherein said control signal generating unit generates the control signal, based on both optical strength detected by said first optical strength detecting unit when shifting the wavelength transmission characteristic of said optical tunable filter across the entire wavelength band including all segments of the multiplexed signal light and information stored in the storage unit.

In related art, Iida disclose, a wavelength tunable filter apparatus for us in a WDM system. Wherein, the apparatus includes, a storage unit storing information indicating the wavelength transmission characteristic of said light transmission filter (read as, memory part 104, for storing information, such as reference data which describe a state of the intensity

variation in said received light intensity signal in a direction in which said wavelength tunable filter changes the wavelength and/or a state of the intensity variation in said signal component; figure 10), wherein said control signal generating unit generates the control signal, based on both optical strength detected by said first optical strength detecting unit when shifting the wavelength transmission characteristic of said optical tunable filter across the entire wavelength band including all segments of the multiplexed signal light and information stored in the storage unit (read as, wavelength setting means for changing the wavelength transmission profile of the tunable filter; wherein the wavelength to be selected by said wavelength tunable filter is changed in accordance with comparison of said reference data against at least one of said state of the detected variations; figures 1, 10; column 2 lines 57-62; column 3 lines 5-18).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to incorporate the teachings of Iida with Watterson as modified by Korn. Since memory allows for storing of reference data for comparison with detected data, thus making an accurate adjustment to the tunable filter.

Consider **claim 5**, and **as applied to claim 1 above**, Watterson as modified by Korn and further modified by Iida further disclose, a second optical strength detecting unit detecting strength of light transmitted through said optical tunable filter (Watterson disclosed, a detector 175 for detecting signal from Etalon filter 160 and dielectric filter 155; figure 4, paragraph 0029), wherein said control signal generating unit generates the control signal, based on both respective optical strength detected by said first and second optical strength detecting units when shifting the wavelength transmission characteristic of said optical tunable filter across the entire wavelength band including all segments of the multiplexed signal light and information stored in

the storage unit (Watterson disclose, a controller 115 receives outputs from detector 145 and 175 and adjust the tunable filter 105 accordingly, so that a desired wavelength is output; figures 3, 4 paragraph 0035) (Iida disclose, wavelength setting means for changing the wavelength transmission profile of the tunable filter; wherein the wavelength to be selected by said wavelength tunable filter is changed in accordance with comparison of said reference data against at least one of said state of the detected variations; figures 1, 10; column 2 lines 57-62; column 3 lines 5-18).

Allowable Subject Matter

10. Claims 7-8, 15-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

12. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Thi Le whose telephone number is (571) 270-1104. The Examiner can normally be reached on Monday-Friday from 7:30am to 5:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

Thi Le

KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER